

quantity, according to which enamel colours were used more or less in substitution of glass coloured in its manufacture, though I admit I entertain a strong opinion in favour of the former, because I know that the question is extensive enough, if gone into, to form the subject of a separate inquiry. But, apart from this consideration, we see in all the works of the Van Linges, the Prices, the Gevinses, and lastly in the modern Munich glass, a very delicate and finished style of painting, combined with the use of a material so delicate and polished as to appear extremely finny, were its thinness not disguised by the mode of painting it. In all glass paintings, therefore, of whatever period, with the single exception I have named, do we find the execution and design of the painting vary with the quality of the glass—being simple when the glass was rich in colour, and not over transparent; and proportionably more and more delicate and complicated as the glass became weaker in colour, more pellucid, and more thin in effect. And if any proof was wanting, either that these corresponding changes were intentional, or dictated by good taste and sound sense, it is amply afforded us by the modern copies of mediæval glass; and even by the devices resorted to in order to insure as much as possible the fidelity of the imitation—and, I am sorry to add, the enormous mendacity not unfrequently relied upon in support of a bad case.

The works to which I allude are copies of glass paintings of the twelfth, thirteenth, fourteenth, and fifteenth centuries. Some persons roundly assert that there exists a positive identity of effect between these copies and the originals: others seek to excuse any apparent difference by the remark that age alone is wanting to complete the identity. In dealing with these assertions, I shall assume the possibility of making exact copies of the design and manipulation of ancient glass paintings; for though I have never met with an instance of such exactness in English work, I certainly have met with it repeatedly in French. I shall, therefore, found whatever I have to urge in disproof of this alleged identity, or would-be identity, upon an examination of the nature and quality of the material of which these copies are composed.

I have discovered a simple mode of testing whether, on the one hand, glass is sufficiently opaque, so as not to appear finny or watery when put up in a window, unassisted by shading—according to the practice of the old style of glass painting,—on the other, whether it is sufficiently clear to produce as brilliant an effect as the old does; as follows:—If the glass when held at arm's length from the eye, and at the distance of more than a yard from an object, does not permit of that object being distinctly seen through it, the glass will be sufficiently opaque. And, if when held at the same distance from the eye, and at the distance of not more than a yard from the object, permits of its being distinctly seen through the glass, it will be sufficiently clear and transparent. I have found this to be the case with a great many pieces of glass of the twelfth, thirteenth, and fourteenth centuries, which had been rendered clear by polishing the surface, or which were already quite clear; for it is a great mistake to suppose that all old glass has been rendered dull on the surface by exposure to the atmosphere. I have seen a good deal of glass of the twelfth and thirteenth centuries, that is as clear now as when it was first made, its surface not having been corroded in the least. But the glass of which these imitative works are made is either smooth on the surface and so pellucid or watery as, when held at arm's length, to permit of any object being perfectly seen through it, which is at the distance of 100 or even 1,000 yards, or more,—or else is artificially roughened on the surface—a practice which reduces the condition of the glass nearly to that of ground glass—for when held at arm's length, it will not permit of any object being seen distinctly through it, which is distant more than an inch from the glass.

The practice, not unfrequently resorted to by the imitators of old glass, of antiquating

smooth surfaced glass—that is, dulling it with the enamel colour used for painting the outlines—renders it, when held at arm's length, nearly, if not quite as opaque, as rough surfaced glass; indeed, almost the only perceptible difference in this respect between rough surfaced glass and smooth surfaced glass that has been antiquated is, that the former is free from the tint necessarily imparted to the latter by the enamel colour with which it is antiquated. Thus we find that imitations of glass of the twelfth, thirteenth, or fourteenth century, if executed in smooth surfaced glass that has not been antiquated, are poor and watery, in comparison with original work of the period. And that, if executed in glass that has been antiquated, or in rough surfaced glass, they are much too opaque. In the one case, to speak popularly, the vision passes too uninterceptedly through the glass; in the other, it is stopped at the surface of the glass, instead of passing about a yard through it, as in the case of ancient work.

I might show the non-identity of modern glass with ancient, even by a reference to the difference of its colouring. The old being invariably harmonious and rich, the modern almost as invariably raw, crude, and poor in tone, a circumstance arising partly from the use of colouring materials different from those formerly employed, partly from a difference in the make of the glass. But I am content to leave the case as it stands. I cannot, however, forbear the remark that it is most amusing to find many earnest admirers of mediæval imitations, who, though apparently ignorant of the practice of roughing the surface of glass, are aware of the pernicious effect of "smudging" or "antiquating" that which is smoothly surfaced, attributing to windows on which neither of these practices has been employed, the effect of ancient ones, because, as they assert, "the glass then remains clear and pure as in ancient times." Was there ever so entire a misconception! Is fininess or wateriness a characteristic of ancient glass? Do we ever find the glass even of the sixteenth century as finny and watery as that used in the works to which they allude, as exact imitations of glass paintings of the thirteenth? Of course, we do not. I say, of course,—because recent analysis has discovered the presence of at least one constituent of old glass, which does not exist in the modern, and which, on being purposely introduced, produces that self-same effect of solidity and richness which we perceive and admire in the old.

It is now time to advert to the revived manufacture of glass, which constitutes the text of this paper. And in doing so, I must disclaim any merit that may attach to the discovery beyond having started the inquiry which led to it, and sometimes having given an opinion on the quality of the colours produced. The merit of the discovery is to be ascribed to the chemical science of my friend Mr. Medlock, of the Royal College of Chemistry, and the practical skill of Mr. Edward Green, of Messrs. Powell's glass-works in Whitefriars.

I was anxious in the autumn of 1849, to procure some blue glass like that of the twelfth century, that is to say, not a raw positive blue, such as we see in modern windows, but a soft, bright, intense blue, or rather a sort of neutralised purple. And for this purpose I submitted some twelfth century blue glass to Mr. Medlock for analysis. He completed his analysis in Easter week, 1850, and thereby determined that the colouring matter was cobalt; thus putting an end to many ingenious speculations that had been previously formed on the subject; some, I am afraid, without much reflection. The lapis lazuli theory, which has been embraced by Mr. Hendrie in his translation of Theophilus, and Mrs. Merrifield in her Ancient Practice of Painting, is indeed opposed to the testimony of Dr. Merritt in the seventeenth century, in a note by him on the Treatise of Neri, where he declares that he had ascertained by experiment the impossibility of colouring glass blue with lapis lazuli, about which there can be no doubt. Mr. Medlock intends, I know, to prosecute

his inquiries on the subject of blue glass, and to analyse various specimens from the twelfth to the sixteenth century, when we know that cobalt was employed, so as to form a series, which, when connected with the analyses of Roman and Greek glass made by Sir Henry De la Beche, and others, will form a most valuable chain in the history of the manufacture. It would therefore be unbecoming in me to anticipate Mr. Medlock's Memoir by giving a more detailed statement of this analysis. I may however add, that the discovery of the true colouring matter, was but one of the beneficial results of this analysis; for in working it out practically, in which due attention was paid to the ancient receipts, the ancient art of making white and coloured glass was, in effect, revived. I say revived, for between the glass that has been already made, and the old, I can discover no perceptible difference, though I have tested it in every way that I can conceive, short of actually having a window made of it. I had hoped that it would have been subjected to this test ere now; but it will at all events be very shortly submitted to it; and as the blue is in question, and indeed the rest of the new glass already made, is destined for some windows in the round part of the Temple Church, in which my friend the Rev. J. L. Petit and myself are interested, I need not say that you will all have an opportunity of judging for yourselves whether or not the experiment is successful. It is, of course, never wise to halloo till you are out of the wood, and had I foreseen the unavoidable delays that have retarded the manufacture, I should have declined addressing you at present. However, as my name was actually put down, I did not think it right to cause any fresh arrangements to be made,—more particularly as I have reasonable grounds for believing in the success of the experiment.

I have now to offer a few remarks in conclusion, which, considering the time I have already trespassed on your attention, I have condensed as much as possible. I have to appeal to you, the professors of the noblest of arts, in favour of this unhappy art of glass painting. I call it an art, because it is impossible to look at the glass at Chartres, Angers, or Brussels, without feeling that glass painting was once practised by artists. I will ask you by whom it is now practised in this country? for abroad it is still artistic,—and further, whose fault is it that it continues in such bad hands? It cannot be for lack of pecuniary encouragement, for I doubt not but that if all the money that has been expended on painted windows within the last twenty years were added together, it would be found to equal, if not exceed, the sums paid to Raphael or Michaelangelo. The fault lies in those who have imbibed the exaggerated and rather sentimental estimate of the middle ages which is so fashionable,—who persist in regarding those ages at a distance, which, softening down deformities, keeps mean and debasing objects out of sight, and leaves only the more noble and lofty ones conspicuous,—who suffer their feelings to be so captivated by the pleasing phantom of their imagination, as to admit neither beauty nor propriety in anything that does not remind them of the middle ages, and therefore prefer copies of mediæval work to anything that the art of the nineteenth century can invent. To such persons I have long ceased to address myself: it is no use arguing against a man's feelings, however conclusive may be the facts adduced. I therefore appeal to you who possess collectively so great an influence in these matters, whether it is enough to have improved in the manufacture of coloured glass? And here I would especially address myself to the Greeks, with whom I am connected by all my early associations, by my Pagan education. Is there any reason why painted glass should be banished from buildings in the classical style? For Palladian chateaux you have the cinque cento style made to your hands, a style susceptible of high artistic development, and which neither in its treatment nor in its ornaments is more severe than the architecture of the building. I advert to this circumstance, because in a neighbouring church, St. James's,